

The Honorable James L. Robart

UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

MICROSOFT CORPORATION, a Washington corporation,

**Plaintiff,**

V.

MOTOROLA, INC., MOTOROLA  
MOBILITY, INC., and GENERAL  
INSTRUMENT CORPORATION.

#### Defendants.

CASE NO. C10-1823-JLR

DECLARATION OF DR. R. SUKUMAR  
IN SUPPORT OF MOTOROLA  
MOBILITY'S AND GENERAL  
INSTRUMENT'S OPPOSITION TO  
MICROSOFT'S RULE 702 MOTION

**NOTED ON MOTION CALENDAR:  
September 10, 2012**

**DECLARATION OF DR. R. SUKUMAR IN SUPPORT OF  
MOTOROLA MOBILITY'S AND GENERAL INSTRUMENT'S  
OPPOSITION TO MICROSOFT'S RULE 702 MOTION  
CASE NO. C10-1823-JLR**

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1 I, RAMAMIRTHAM SUKUMAR, declare as follows:

2 1. I am over 18 years of age.

3 2. I have been retained by counsel for Motorola Mobility, Inc. and General  
4 Instrument, Inc. to serve as an expert for the purposes of conducting survey research and  
5 understanding usage and valuation of certain features offered in Microsoft's Xbox 360 console.

6 3. I have a PhD and M.B.A. from the University of Pittsburgh. I have published  
7 several articles relating to marketing analysis and marketing research.

8 4. I am the founder and CEO of Optimal Strategix Group, Inc., which is a strategic  
9 market research and marketing consulting company, founded in 1998. I have served as a  
10 consultant for many Fortune 500 companies, helping clients focus on understanding the value of  
11 the products they offer and the market's value for attribute improvement. For more than 10 years,  
12 I taught core courses in Marketing Management, Market Research and Marketing Strategy,  
13 Database Marketing, Data Mining and New Product Development at a number of universities  
14 including City University of New York, Baruch College; Rutgers Business School, Sam M. Walton  
15 International School of Management; Rice University; C.T. Bauer College of Business; and City  
16 University of Hong Kong. [Wion Ex. 4<sup>1</sup>, Sukumar Report, pp. 17-21.]

17 5. Since 1997, I have consulted on marketing and market research issues, including  
18 survey design and analysis, for numerous companies and organizations such as Pfizer, Genentech,  
19 AstraZeneca, Johnson and Johnson Pharmaceuticals, Abbot Laboratories, Nestle, Kraft Foods,  
20 ExxonMobile, Jiffy Lube/Pennzoil, Schlumberger-GeoQuest, Halliburton, Lucas Arts, Qwest  
21 Cyber Solutions, Inc., Lubrizol, Shell Oil, Calgary Transit Authority, Diagnostic Systems  
22 Laboratories, Columbia/HCA, METRO Transit, Conoco, and St. Luke's Episcopal Hospital. I am  
23 professionally affiliated with the American Marketing Association, American Statistical  
24

25 <sup>1</sup> "Ex. \_\_\_\_" refers to the stated Exhibit to the Declaration of Samuel L. Brenner, submitted on August 27,  
26 2012, (Dkt. No. 392), or Second Declaration of Samuel L. Brenner, submitted concurrently herewith. "Wion Ex. \_\_\_\_"  
refers to the stated Exhibit to the Declaration of Christopher Wion, submitted by Microsoft on August 27, 2012 (Dkt.  
No. 398).

1 Association, INFORMS, American Economic Association, American Psychometric Society,  
 2 American Statistical Association, Econometric Society, and the Product Development and  
 3 Management Association. [Wion Ex. 4, Sukumar Report, p. 21.]

4       6.     In the area of intellectual property, I have performed expert and consulting work  
 5 related to valuation of patented features within the consumer electronics industry. I have provided  
 6 a report and testimony regarding conjoint analysis – using the same methodologies I employed in  
 7 this matter – in *Nomadix, Inc. v. Hewlett-Packard Company et al.*, (C.D. Ca.) and *Apple Inc. v.*  
 8 *Samsung Electronics Co. Ltd. et al.*, (N.D. Ca.). Specifically, I recently provided testimony before  
 9 a jury, on behalf of Samsung Electronics, regarding a conjoint analysis I conducted in regard to  
 10 that litigation. [Wion Ex. 4, Sukumar Report, p. 17; Ex. 48, Sukumar Depo. Tr., 13:6-15:19.]

11       7.     I have reviewed Dr. Peter Rossi's August 10, 2012 Rebuttal Report to my Expert  
 12 Report of July 24, 2012, his Declaration in Support of Microsoft's Rule 702 Motion to preclude  
 13 my testimony, and the transcript of Dr. Rossi's August 29, 2012 deposition. I disagree with the  
 14 vast majority of Dr. Rossi's opinions, including his allegations that I have failed to provide  
 15 sufficient underlying documentation, that I have employed the wrong methodology to calculate  
 16 confidence levels, that online, compensated surveys are inherently unreliable, and that the use of  
 17 certain technical terminology in my surveys renders the results useless. Dr. Rossi's criticisms lack  
 18 factual and scientific basis. It appears that he is either not sufficiently experienced with or  
 19 misunderstands the methodologies I employed, all of which have been well known and accepted  
 20 by the surveying field for many years.

21       8.     My July 24, 2012 expert report provided information relating to my methodologies  
 22 and results for two surveys relating to the usage and desirability of certain features within an Xbox  
 23 360 console. Specifically, the surveys and accompanying analyses related to the inclusion of  
 24 H.264 (referred to herein as the "H.264 survey") and Wi-Fi (referred to herein as the "802.11  
 25 survey") in Xbox consoles. [Wion Ex. 4, Sukumar Report, p. 3.] My report details the relevant  
 26 steps I took in constructing and carrying out the surveys as well my analysis of the data obtained.

Included with my report were exhibits and data files that plainly showed the questions asked of each respondent, the responses given by each respondent, and the calculations used for the advanced analysis. The data was provided in three file formats, all of which are well known and widely used within the fields of statistics and market research. Specifically, the data were provided in (1) either Comma-Separated Value (.csv) and Excel (.xls) file types which are easily opened by the Microsoft Excel program; and (2) a file type (.sav) that is used by IBM's SPSS software for data analysis. [MOTM\_WASH1823\_603524-MOTM\_WASH1823\_603549.]

9. I designed and implemented two surveys designed to identify usage and valuation of H.264 decoding and WiFi in Microsoft's Xbox console. I was not asked to, and did not, render an opinion on Microsoft's alleged infringement of Motorola's patent portfolio. I was not provided with the numbers of the patents at issue, nor did I need to know them to conduct the surveys. [Ex. 48, Sukumar Depo. Tr., 129:3-130:5.] I also was not asked to, and did not, render an opinion as to whether Motorola's asserted patents in the above-captioned action are necessary to practice the standard or what the incremental value of any individual patent (or specific portfolio of patents) would be to a user in the marketplace. [Ex. 48, Sukumar Depo. Tr., 125:25-128:3.]

a. At my direction, a field team, led by Lia Pasternack, the Director of Field Services for OSG, contracted with a facility at a local mall to perform qualitative interviews with mall shoppers. [*Id.*, 25:20-26:6.] Ms. Pasternack joined OSG in 2009 and has over 10 years of experience in quantitative and qualitative research data collection. Qualitative interviews are, by their nature, exploratory and are used to determine a threshold understanding of how certain consumers talk about or reference certain products. [Wion Ex. 4, Sukumar Report, pp. 5-6; Ex. 48, Sukumar Depo. Tr. 66:13-24.] The field team screened potential respondents based in part on whether they owned an Xbox console and whether they were responsible for or involved in the decision to purchase the Xbox console. [*Id.*, 28:25-31:5.]

b. The field team interviewed a total of 30 respondents. [Wion Ex. 4, Sukumar Report, p. 4.] This is an acceptable number of respondents, and is within the guidelines

suggested in the Reference Manual on Scientific Evidence (2<sup>nd</sup> Ed. 2000), which is identified in the References section of my report. [Wion Ex. 4, Sukumar Report, p. 22.]. It is my standard practice to receive verbal debriefings from a field team after such qualitative interviews, and to work with them to design a survey based on the results. I do not require or encourage field teams to take notes during these interviews, because in my experience, doing so hinders the flow of conversation and may ultimately defeat the purpose of an interview. [Ex. 48, Sukumar Depo. Tr., 32:18-33:1.] Ms. Pasternack provided me with a verbal debrief of the findings from the qualitative interviews, and we worked together to design the surveys. [Wion Ex. 4, Sukumar Report, pp. 5-6.]

c. These surveys were then pre-tested by a field team, again led by Ms. Pasternack. [Ex. 48, Sukumar Depo. Tr., 37:7-18.] The pre-tests were conducted in person with screened respondents. [Ex. 48, Sukumar Depo. Tr., 57:16-58:13.] It is my understanding from speaking with Ms. Pasternack that the respondents were given instructions on completing the computer-based survey and were directly observed at all times during the pre-test process by the proctors and Ms. Pasternack, who served as moderator. [*Id.*] The purpose of a pre-test is to determine whether any of the questions are confusing or could be better stated. [*Id.*] For example, it is my understanding that from this pre-test, Ms. Pasternack and her team determined that respondents had difficulty remembering what Month and Year they purchased their Xbox, but could better recall how long ago they purchased it. [*Id.*, 50:23-51:7.] These refinements were made by Ms. Pasternack's team to the surveys during the pre-test. [*Id.*, 51:8-20.] Ms. Pasternack and her team also learned that respondents were more comfortable using increments of \$100 for the conjoint portion of the survey instead of the \$50 increments we initially programmed, so we changed that as well. [*Id.*, 49:7-50:9.]

d. I understand that the respondents were also provided with a two-page document. The front page had a question asking each respondent to identify whether any of the test questions were confusing. The second page contained a list of Xbox features. The

1 respondents were asked to write their name at the top of the questionnaire page and to circle the  
2 top 5 features from the second page that were most important to them. [Id., 48:1-49:6; Ex. 59,  
3 Pre-Test Questionnaire.] I did not review these papers prior to finalizing the surveys because, as I  
4 have noted, the purpose of pre-testing is to refine questions to minimize confusion. [Ex. 48,  
5 Sukumar Depo. Tr., 47:11-23.] These refinements were made by the field team during the pre-test  
6 process, and later approved by me, after I was verbally debriefed by Ms. Pasternack. It is my  
7 customary practice not to review the papers or other documentation from the pre-test because there  
8 is no need to do so. [Id.] I have seen these papers since I finalized my expert report, and as  
9 expected, they do not contain any information that would cause me to change any portion of my  
10 report.

11 e. I understand that Dr. Rossi believes that respondents were “telephoned ...  
12 AFTER they completed the questionnaire on line” (emphasis is his). Dr. Rossi cites no evidence  
13 for this supposition, and it is untrue. Respondents were observed by Ms. Pasternack during the  
14 pre-testing and she answered questions and made adjustments to the surveys, as she saw fit, based  
15 on feedback from the respondents. [Id., 49:7-51:20.]

16 10. I used Authentic Response to recruit respondents and conduct the surveys online.  
17 Authentic Response is well-known and well-regarded within the industry for providing  
18 representative samples across the United States and across consumer industry groups. [Wion Ex.  
19 4, Sukumar Report, p. 7.] I and Ms. Pasternack reviewed Authentic Response’s panel  
20 management features prior to engaging them and have worked with them on numerous projects.  
21 [Ex. 48, Sukumar Depo. Tr., 232:3-13.]

22 11. Providing compensation or “gifts” to survey respondents is standard procedure in  
23 the industry and ensures a minimum level of consumer participation. [Ex. 48, Sukumar Depo. Tr.,  
24 219:25-222:4.] In my 16 years of performing market surveys, I have found that providing  
25 appropriate compensation does not measurably impact or bias the results of the survey. I  
26

1 understand from Dr. Rossi's testimony that he has compensated survey respondents as well. [Ex.  
2 47, Rossi Depo. Tr., 25:11-13].

3       12. My surveys included terms like “WiFi,” “H.264,” “progressive video,” “interlaced  
4 video” and “MBAFF.” [Wion Ex. 4, Sukumar Report, Ex. A2, H.264 Questionnaire.] The  
5 inclusion of these terms does not inherently affect the results of the surveys. [Ex. 48, Sukumar  
6 Depo. Tr., 76:4-78:12.] Instead, one must look to the purpose of the questions and the information  
7 it seeks to elicit. In the case of the one question in the H.264 survey that included the use of  
8 “MBAFF,” for example, any respondent unsure of its meaning or unsure of the “right” response  
9 had the option to choose “Not Sure” as the response. [Wion Ex. 4, Sukumar Report, Exs. A2,  
10 p. 15 and F2, QH5A1-A2.]


[Privacy Policy](#)

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Please select the types of video content you have viewed on your Xbox Console (connected to your TV).

*(Please select all that apply)*

Interlaced  
 Progressive  
 Not sure

**Next | >**

Please select the types of video content you have viewed on your Xbox Console (connected to your TV).

*(Please select all that apply)*

MBAFF (Macroblock Adaptive Frame/Field)  
 Progressive  
 Not sure

**Next | >**

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1 Because a respondent had to first identify that he or she had viewed “interlaced” video content on  
 2 their Xbox console in QH5A1 in order to reveal question QH5A2, more than 50% of respondents  
 3 never even saw “MBAFF” because they had already answered “Not Sure” in QH5A1. [Ex. 48,  
 4 Sukumar Depo. Tr., 230:15-231:7.]

5           a. I relied on the methodologies set forth in the *Reference Manual on*  
 6 *Scientific Evidence* (2nd Ed. 2000) (“Reference Manual”), which was identified in the References  
 7 section of my report. The Reference Manual notes that including a “not sure” or “I don’t know”  
 8 selection will minimize a respondent’s need to guess, if he or she does not have sufficient  
 9 knowledge to answer a question. [See Ex. 52, p. 250 (“By signaling to the respondent that it is  
 10 appropriate not to have an opinion, the question reduces the demand for an answer and, as a result,  
 11 the inclination to hazard a guess just to comply.”)]

12           b. Based on my experience, questions as straightforward and uncomplicated as  
 13 QH5A1 and QH5A2 do not necessarily need to be pre-tested. [*Id.*] Either a respondent has the  
 14 knowledge to identify the particular types of video encoding that he or she has viewed on their  
 15 Xbox, or they can “opt-out” by responding “Not sure.” These questions, as posed, provide a  
 16 reliable means by which to obtain the desired information.

17           c. I note that Dr. Rossi states that the number of respondents selecting “Not  
 18 sure” in response to QH5A1 should have been “closer to 100%,” but he provides no underlying  
 19 facts to substantiate his personal guess. [Rossi Decl.,<sup>2</sup> ¶ 23.] All the numbers I provide in my  
 20 report are based on actual data obtained by surveying respondents.

21           13. Similarly, Dr. Rossi opines that “B/G” and “B/G/N” are “non-standard terms” and  
 22 are, therefore, confusing to respondents. Again, Dr. Rossi provides no support for this view. In  
 23 fact, the terminology I used was consistent with how it is used on the internet—including  
 24 Microsoft’s own Xbox website. [Ex. 48, Sukumar Depo. Tr., 87:11-21; Ex. 51, printout from

25  
 26           <sup>2</sup> “Rossi Decl.” refers to the Declaration of Peter E. Rossi In Support Of Microsoft Corporation’s Rule 702 Motion To Preclude Testimony By Charles R. Donohoe And Dr. R. Sukumar, filed August 27, 2012.

1 Amazon.com website showing product information for an Xbox 360 Wireless Network Adapter  
 2 (“With increased speed, range and wireless security features\*, the Xbox 260 Wireless ‘N’  
 3 Networking Adapter offers the fastest and most convenient connection to Xbox LIVE. You can  
 4 seamlessly download or stream HD movies, TV episodes, and games from Xbox LIVE  
 5 marketplace in full 1080p and 5.1 surround sound from anywhere in the house.”\*\* *Compatible with*  
 6 *A/B/G/N networks, . . .*”) (emphasis added).]

7       14. Dr. Rossi opines – again without any support – that the average amount of time it  
 8 took for a respondent to complete a survey (slightly over 4 minutes) somehow “suggests strongly  
 9 that the reported values are unreliable.” [Rossi Decl., ¶ 35.] First, Dr. Rossi misstates the  
 10 meaning of the Elapsed Time column. As I explained during my deposition, “Elapsed Time”  
 11 refers to the amount of time a respondent took to complete the conjoint exercise (which consists of  
 12 15 nearly identical questions), *not* the time it took to complete the entire survey. [Ex. 48, Sukumar  
 13 Depo. Tr., 103:15-23.] Based on my experience in conducting hundreds of surveys, it is not  
 14 surprising that an average respondent was able to complete a 15 question survey in less than 5  
 15 minutes, where the questions were short, uncomplicated, and nearly identical. Certainly, there is  
 16 no basis on this fact alone to assume that respondents who were able to complete a survey in this  
 17 time somehow “did not devote substantial effort to completing the survey,” as Dr. Rossi suggests.  
 18 [Rossi Decl., ¶ 32]. In fact, nothing I have ever seen compels me to exclude an entire class of  
 19 respondents based simply on the time to complete the survey. [*Id.*, 72:19-74:2.]

20       15. Each survey was broken into two distinct sections. The first section asked direct  
 21 questions about usage and preferences for the Xbox console. The results of the first section are  
 22 calculated by tallying the number of weighted responses and calculating a percentage from the  
 23 sample size. The second section presents what is known as a conjoint analysis. Conjoint analysis  
 24 has been used extensively in understanding how the market values improvements in a given  
 25 feature. The term “conjoint analysis” (also commonly referred to as “tradeoff analysis”), was  
 26 coined from the words “consider jointly.” It has been used in a number of legal cases to assess the

1 importance a given feature (or attribute) has in a customer's decision to buy a product having that  
 2 feature. The methodology has been used in patent litigations to determine the market's value of  
 3 improvements resulting from inclusion of a patented feature. (The market's value for the  
 4 improvement of a feature is sometimes referred to as "MVAI".)

5       16. Conjoint analysis is used to determine what value a customer places on a particular  
 6 feature of a product by measuring the partial value ("partworth" utility) of multiple individual  
 7 features of the product. The data is used to isolate the utility of one particular feature to the  
 8 customer. I used mathematical formulations, developed over a decade ago by Drs. Ofek and  
 9 Srinivasan and published in MARKETING SCIENCE, a well-respected journal, to calculate a  
 10 Willingness To Pay (WTP) value that represents what a respondent will pay for the addition of a  
 11 given feature. In this case, I then took the WTP values for each individual user across each tested  
 12 feature and presented the Mean (or average) WTP for each tested feature. I note that although Dr.  
 13 Rossi critiques the Ofek/Srinivasan methodology, he acknowledges that the publication in which it  
 14 was presented is peer-reviewed, thus confirming it as an eminently reliable article. [Ex. 47, Rossi  
 15 Depo Tr., 224:25-225:7.]

16       17. My report details the steps taken to calculate WTP and includes citations to the  
 17 supporting references that validate the procedures used in this study. I also provided Microsoft  
 18 with detailed spreadsheets containing all the calculations performed to derive the Mean WTP.  
 19 [MOTM\_WASH1823\_603549.] I also included ".sav" files which are used in IBM's SPSS  
 20 program—a commonly used statistical analysis tool. [MOTM\_WASH1823\_603539;  
 21 MOTM\_WASH1823\_603545] I identified in my report the programs used for data collection and  
 22 analysis—specifically, Sawtooth Software's CBC programs. [Wion Ex. 4, Sukumar Report, pp. 3-  
 23 4.] Thus, the file names for these programs included my team's internal project name for the two  
 24 surveys (5007A and 5007H, respectively) and descriptive phrases such as "802.11 - All CBC  
 25 Data" which clearly means that it contains all the CBC data for the 802.11 portion of the survey.  
 26 Similarly, I included an excel spreadsheet called "WTP Calculation" which contained all my

1 calculations for the WTP values. [MOTM\_WASH1823\_603549.] I note that Dr. Rossi included  
 2 as part of his report calculations performed by Tim Savage, who clearly was able to access and  
 3 analyze the data contained in the produced SPSS files. [Ex. 60, Rossi Report, Appendix G.]

4       18. As stated in my report, I used the term WTP interchangeably with MVAI (market  
 5 value for an attribute improvement), which I also refer to as “market value for the improvement of  
 6 a feature” in my report. [Wion Ex. 4, Sukumar Report, p. 8.] The WTP/MVAI calculation is not  
 7 calculated on an individual basis and does not correspond to the actual price a manufacturer would  
 8 charge for a product as this would necessarily depend on other factors. I did not have the data to  
 9 make such a calculation, nor was I asked to do so. The WTP/MVAI calculation in my report is  
 10 representative of the maximum price that the market, as represented by a group of consumers, is  
 11 willing to pay for a particular feature. [Ex. 48, Sukumar Depo. Tr., 147:24-148:8.]

12       19. I did not use Bayesian methods to compute the WTP/MVAI values, nor was it  
 13 necessary for me to do so. Instead, as noted above and in my report, I used the Ofek/Srinivasan  
 14 method, which is a well accepted alternative means of calculation. [Wion Ex. 4, Sukumar Report,  
 15 p. 3; Ex. 48, Sukumar Depo. Tr., 216:14-217:24.]

16       20. I calculated and reported margins of error for the WTP values using classic  
 17 statistical method, also known as the “delta” theorem. [Ex. 48, Sukumar Depo. Tr., 214:12-  
 18 216:25.] The equations used to derive these percentages appear in the most fundamental statistics  
 19 references and textbooks, including “Introduction to the Theory of Statistics” (3d. edition) by  
 20 Mood, Graybill and Boes. [*Id.*] Dr. Rossi’s assumption that it is necessary to use Bayesian  
 21 methods to calculate error margins ignores the fact that the delta theorem, and the resulting  
 22 confidence intervals generated by the theorem, is a well known and accepted alternative. [*Id.*]

23       21. The MVAI estimates I calculated for the Wi-Fi feature differed between the 802.11  
 24 survey and the H.264 survey based, in part, on the fact that the H.264 survey also included 802.11  
 25 as an attribute. Because the H.264 survey included additional attributes that the respondents  
 26 valued, they were then willing to place more emphasis on those features. [*Id.*, 144:12-146:22.]

1 Dr. Rossi claims that the calculated margins of error are too small, but he provides no basis as to  
 2 why and has not performed any calculations of his own to support his claim. [Ex. 47, Rossi Depo.  
 3 Tr., 244:15-22.] My calculations are based on the raw data provided and are readily reproducible.

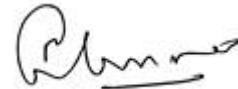
4       22. In order to forestall the possibility of illogical results, I imposed certain constraints  
 5 when analyzing the CBC data using the CBC program. This is common practice and is discussed  
 6 in “The CBC/HB System for Hierarchical Bayes Estimation” paper at page 15. This paper is  
 7 identified in my report in the References Section. [Wion Ex. 4, Sukumar Report, Ex. E.]

8           a. Page 15 of this paper explains that “[c]onjoint studies frequently include  
 9 product attributes for which almost everyone would be expected to prefer one level to another.  
 10 However, estimated part worths sometimes turn out not to have those expected orders. This can  
 11 be a problem, since part worths with the wrong slopes, or coefficients with the wrong signs, are  
 12 likely to yield nonsense results and can undermine users’ confidence.” Thus, using constraints  
 13 maintains the credibility of the calculations. Constraints are appropriate for attributes that have  
 14 “unambiguous a-priori preference orders, such as quality, speed, price, etc.” Those are precisely  
 15 the types of constraints I used to ensure that the results are not nonsensical. [Ex. 48, Sukumar  
 16 Depo. Tr., 114:7-116:20.]

17           b. Dr. Rossi mischaracterizes how the CBC software treats the constraints. As  
 18 is clear from the data provided, constraints do not predetermine a user’s utility function for a given  
 19 attribute to be higher than it otherwise would be without constraints. For example, if a user does  
 20 not value Wi-Fi, then the part-worths utility for that feature will remain at or close to zero,  
 21 regardless of the constraints. [*Id.*]

1 I declare under penalty of perjury of the laws of the United States and the State of  
2 Washington that the foregoing is true and correct.

3  
4 DATED this 5th day of September, 2012.  
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9 \_\_\_\_\_  
10 Dr. R. Sukumar  
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## CERTIFICATE OF SERVICE

I hereby certify that on this day I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system which will send notification of such filing to the following:

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DATED this 5th day of September, 2012.

/s/ Marcia A. Ripley  
Marcia A. Ripley

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